SAMSUNG

ROOM AIR CONDITIONER

AWH090ZE0K

SERVICE Manual

AIR CONDITIONER

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1. Precautions

1. Warning: Prior to repair, disconnect the power cord from the circuit breaker.

2. Use proper parts: Use only exact replacement parts. (Also, we recommend replacing parts rather than repairing them.)

3. Use the proper tools: Use the proper tools and test equipment, and know how to use equipment may cause problems later-intermittent contact, for example.

4. Power Cord: Prior to repair, check the power cord and replace it if necessary.

5. Avoid using an extension cord, and avoid tapping into a power cord. This practice may result in malfunction or fire.

6. After completing repairs and reassembly, check the insulation resistance, Procedure: Prior to applying power, measure the resistance between the power cord and the ground terminal. The resistance must be greater than 30 megohms.

7. Make sure that the grounds are adequate.

8. Make sure that the installation conditions are satisfactory. Relocate the unit if necessary.

9. Keep children away from the unit while it is being repaired.

10. Be sure to clean the unit and its surrounding area.

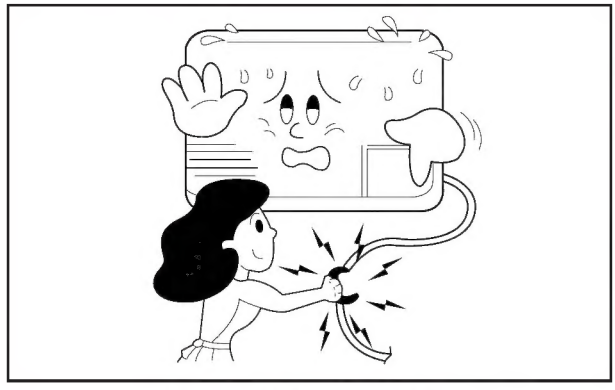


Fig. 1-1 Avoid Dangerous Contact

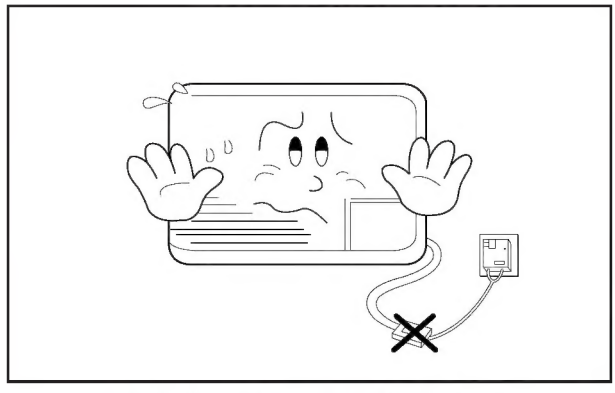


Fig. 1-2 No Tapping and No Extension Cords

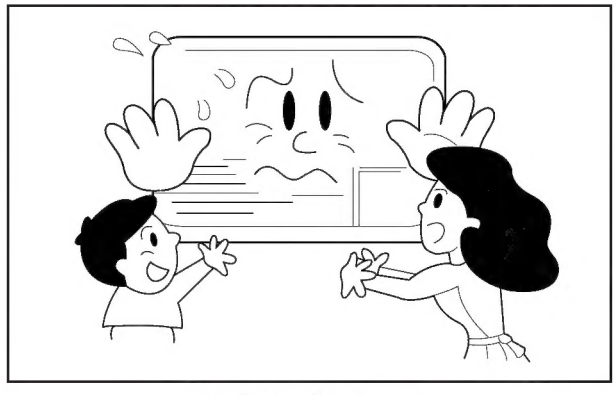


Fig. 1-3 No Kids Nearby!

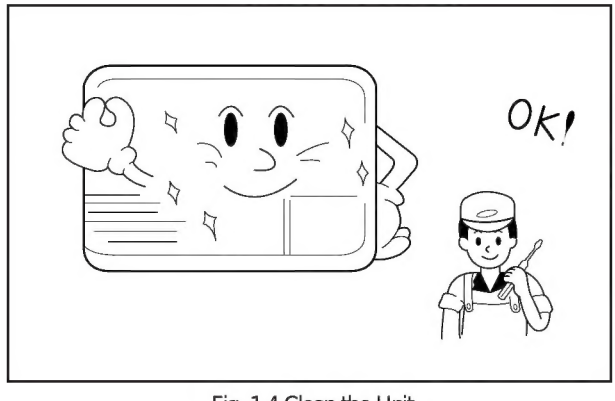


Fig. 1-4 Clean the Unit

2. Product Specifications

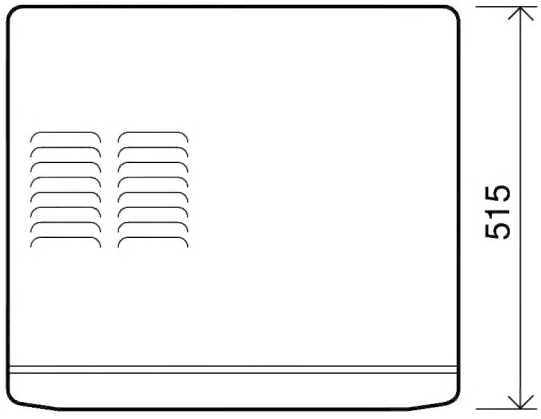
2-1 Table

Item	Unit of Measure	AWH090ZE(COOL/HEAT)	Remarks
Type	-	Window	
Dimensions: (Width X Height X Depth)	mm	520 X 345 X 515	
Packing Size (Width X Height X Depth)	mm	580 X 445 X 580	
Voltage:	Volt	220 ~ 240	
Phase	-	Single	
Frequency	Hz	50	
Operating Current	A	4.3 / 3.8	
Power Consumption	W	1,020 / 860	
Refrigerant Type	FREON	R-22	
Refrigerant Charge	g	510	
Capacity	BTU/h	8,500 / 8,500	
EER	BTU/h.W	8.3 / 9.7	
Net Weight	kg	36	
Condenser	Row	2 X 13	
Condenser Fan	Type	Propeller Fan	
Evaporator	Row	2 X 12	
Evaporator Fan	Type	Blower	
Fan Motor	W	AMAFS-040AXEA	
Compressor(Rotary)	Model	44H092J W1E4	
Overload Protect	-	MRA12037-12007	
Compressor Capacitor Fan Motor Capacitor	μF/VAC μF/VAC	30 / 370 3 / 370 (DUAL)	
Fan Speed Control	-	Fan speed switch (High & Low)	
Thermo Control	-	Thermostat	

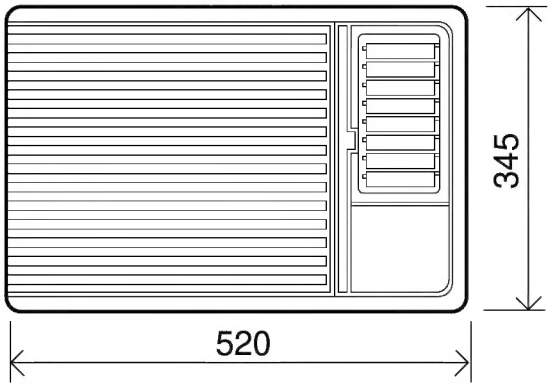
2-2 Dimensions

2-2-1 Main Unit

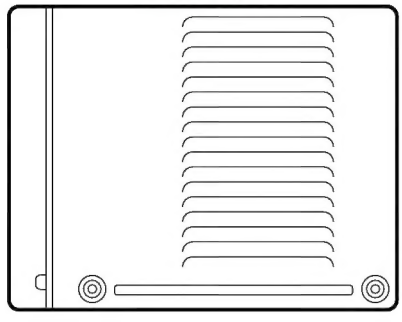
Unit : mm

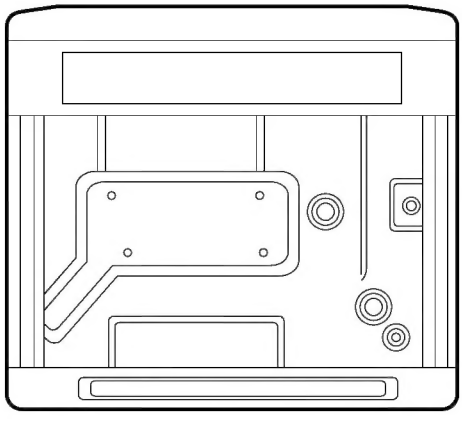


Front view



Side view





3. Installation and Operating Instructions

3-1 Installation

* When selecting the area for installing the unit, be sure to obtain approval of the customer.

1. Make sure that you install the unit in an area that provides good ventilation.
   The air conditioner must not be blocked by any obstacle affecting the air flow near the air inlet and air outlet.

2. Make sure that you install the unit in an area which can endure the weight and vibration of the unit.

3. Make sure that you install the unit away from heat or vapor.

4. Make sure that you install the unit in an area where the cooled(heated) air can be evenly spread in a room.

5. Make sure that you install the unit in an area away from TVs, audio units, cordless phones, fluorescent lighting fixtures and other electrical appliances. (obtain a clearance of at least one meter)

6. Make sure that you install the unit in an area which provides easy drainage for condensed water.

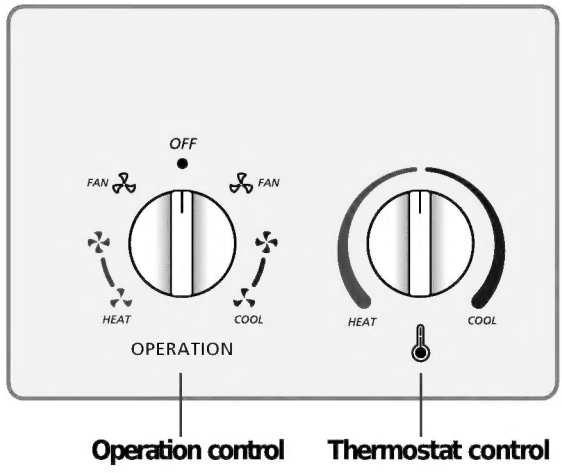
7. Make sure that you install the unit in an area not exposed to rain or direct sunlight.
   (Install a separate sunblind if exposed to direct sunlight.)

8. Do not install the unit in an area subjected to noise or vibration amplification which may affect your neighbor.
   (Fix the unit firmly if mounted in a high place.)

Caution:

Do not use the air conditioner in such areas as a greasy area(including machine oil), saline area(sea side), or sulphuric area(hot spring). When using the air conditioner in these areas, special maintenance is required. Contact your local dealer or our service center for advice.

3-2 Function Description



3-2-1 Operation control

(1) COOL MODE(BLUE POSITION) :

The air conditioner starts cooling, provided that the room temperature is higher than the selected temperature.

- (HI COOL) : The fan turns rapidly.
- (LOW COOL) : The fan turns slowly.

• Thermostat control in cool mode.

Left end : COOL air will be supplied above 30 ~ 35˚C
COOL air will be ceased below 28 ~ 32.5˚C
Right end : COOL air will be supplied above 17.4 ~ 20.4˚C
COOL air will be ceased below 14.4 ~ 17.4˚C

(2) HEAT MODE(RED POSITION) :

The air conditioner starts heating, provided that the room temperature is lower than the selected temperature.

- (HI HEAT) : The fan turns rapidly.
- (LOW HEAT) : The fan turns slowly.

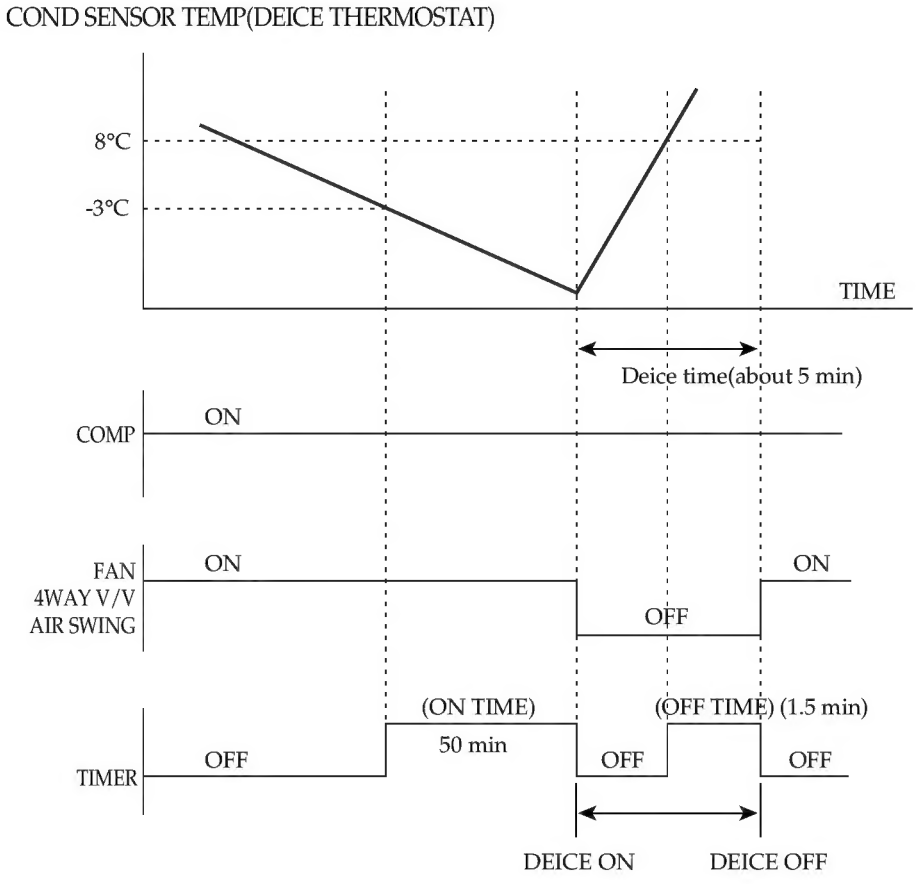
• Thermostat control in heat mode.

Left end : HEAT air will be supplied below 14.4 ~ 17.4˚C
HEAT air will be ceased above 17.4 ~ 20.4˚C
Right end : HEAT air will be supplied below 28 ~ 32.5˚C
HEAT air will be ceased above 30 ~ 35˚C

• DEICE function in heat mode :

Deice operation is controlled by sensing the condenser heat exchange temperature and timer.

✻ Deice time is about 5 minutes.
✻ Operating the deice, the air conditioner starts cooling cycle and then the fan stops.
✻ Deice operation



(3) FAN MODE ( )

The fan mode controls dehumidify, filter and circulate room air, with the fan continuing to circulate air while the compressor is turned off. The fan turns only high speed.

3-2-2 Air swing switch(Option)

On ( ) :

Automatic ventilation distributes the air flow throughout the room.
(controls the right and left blade-V)

OFF ( ) :

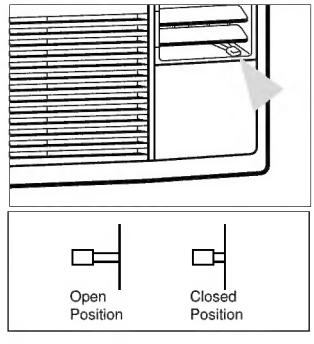
- Maintain a fixed direction of air flow.
  Set the air swing switch to OFF the instant the blade-V come to the desired positioner.
- When the air conditioner starts up in deice mode automatically, the swing of blade is stopped for a moment and the deice operating is stopped, the swing of blade operates again.

3-2-3 Ventilation switch

Use the ventilation switch when you want to exhaust unfresh air.

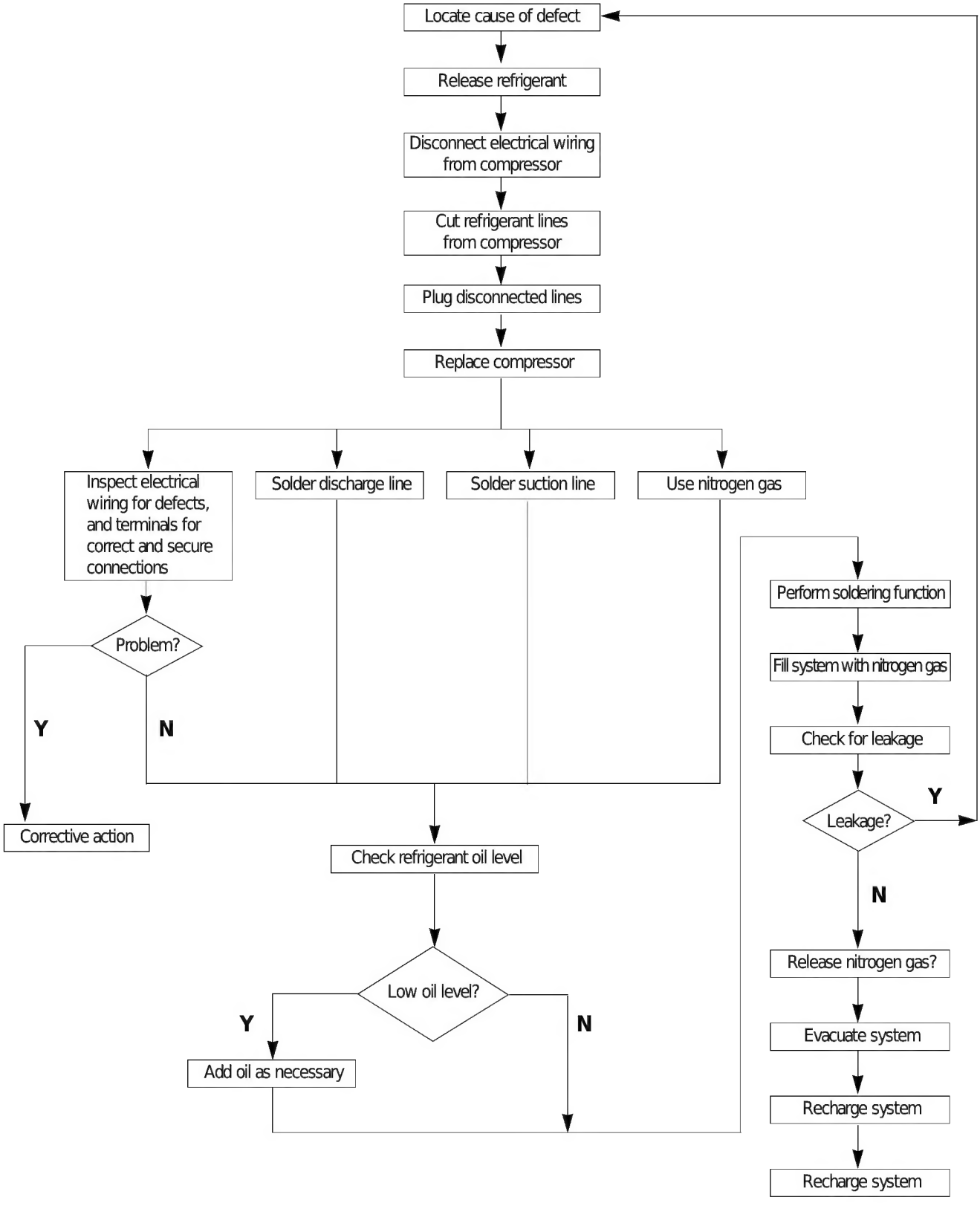
Open position : The air inside the room circulates while exhausted is sent outside.

Closed position : The air inside the room circulates without exhaust



4. Disassembly and Reassembly

4-1 Compressor Replacement Flow Chart



4-2 Checking the oil

Fill the transparent container with 10cc of oil, and then conduct the test.

4-2-1 Oil quality

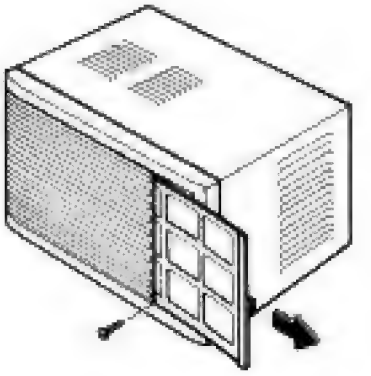
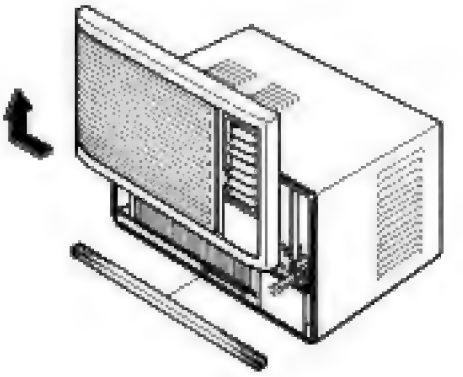
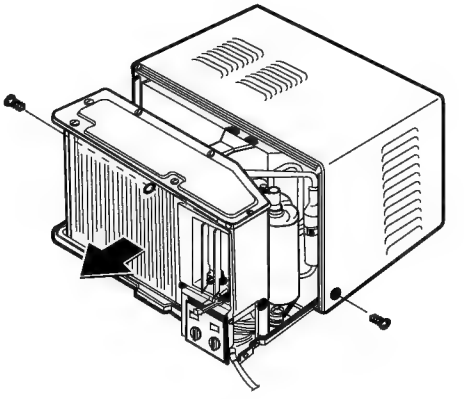
Refrigerant Cycle	Oil Condition		Remarks
	Color	Odor	
Normal	Light Yellow	No Odor	Return with the system
Over-heated	Brown	-	Oil Change
Compressor damage	Dark brown	Pungent oil	Oil Change

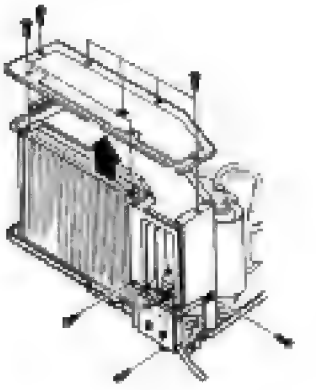
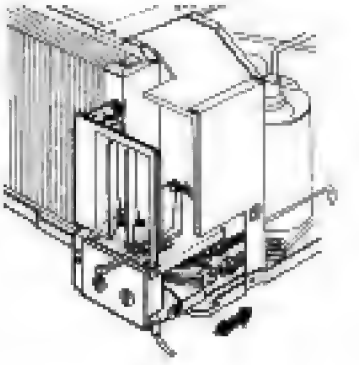
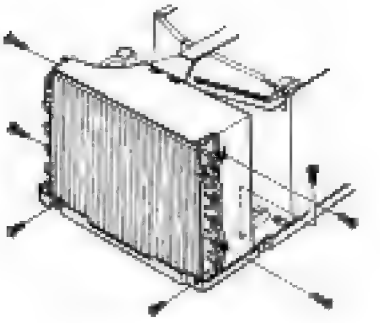
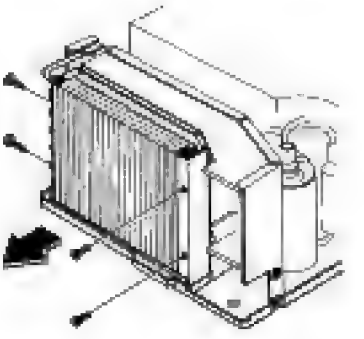
4-2-2 Replacing and refilling the refrigerant oil

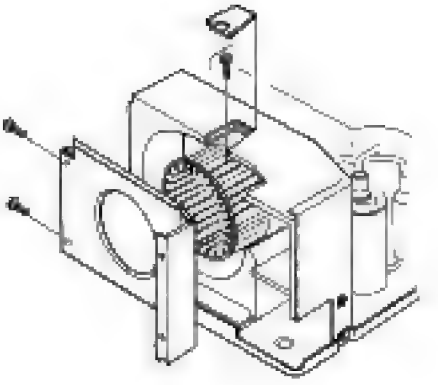
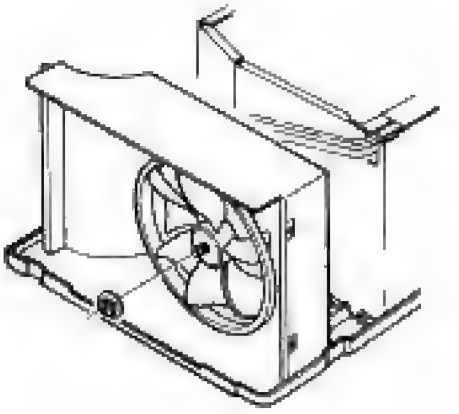
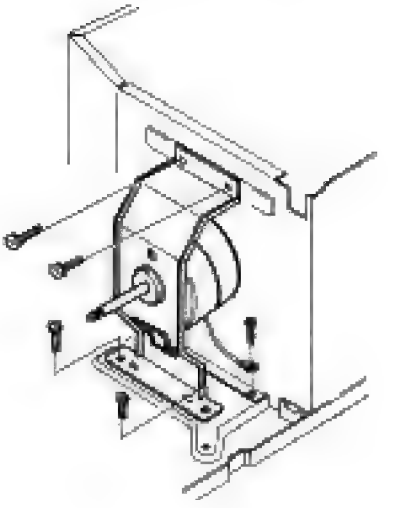
1. Replacing the compressor - Do not fill the system with oil as the compressor is already charged.
2. Replacing the condenser - Refill 50cc.
3. Replacing the evaporator - Refill 50cc.
4. Replacing the refrigerant - Refill 30cc.
5. The high pressure side is filled up with oil after the vacuum is completed.
6. When the refrigerant leaks, it is generally not necessary to refill the oil if the leakage is not severe.

4-3 Disassembly and Reassembly Procedure

Stop operation of the air conditioner and remove the power cord before repairing the unit

No.	Part name	Procedures	Remarks
①	Ass'y-Grill	1. Pull out the Guard-air filter on the grille. 2. Remove the Screw on the grille.	
		3. Push the grille left side and pull up. 4. Pull out the Seal-cabi front between Base pan and Cabinet.	
②	Ass'y-Frame	1. Remove the 2 screws both side of the cabinet . 2. Pull the handle at the Base pan to separate the frame from the Cabinet.	

No.	Part name	Procedures	Remarks
③	Ass'y-Control & Ass'y-Frame Blade	1. Remove the Cover-Evap. 2. Remove the 3 screws to disassmble Ass'y-control and Frame-blade.	
		3. Separate 3 Ass'y-lead wires from the Ass'y-control and the deice sensor from the condenser.	
④	Ass'y-Condenser	1. Remove the 2 screws back of the Base pan. 2. Remove the 5 screws both side of the Casing cond and on the Base pan.	
⑤	Ass'y-Evaporator	1. Remove the 2 screws front of the Partition-Evap. casing and 2 screws left side of the Evaporator.	

No.	Part name	Procedures	Remarks
⑥	Blower-Fan	1. Remove the Cover-Evap. case. 2. Loosen the hex. bolt to disassemble the blower. 3. Remove the 2 screws left side of the Partition-Evap. casing.	
⑦	Propeller Fan	1. Loosen the Nut flange.	
⑧	Motor	1. Remove the 4 hex. bolts on the partition and Base pan. 2. Remove the Screw on the Base pan.	

5. Troubleshooting

	Procedures
1	Check to see whether the electric circuit or electric parts are damaged before repairing the air conditioner.
2	Conduct the following generally to check whether the electric circuit or other electric parts are damaged.

5-1 Troubleshooting Method and Precautions

5-1-1 Checking of power source

Check to see whether the voltage of the power source is 220 ~ 240V, 50Hz.
The air conditioner may not operate properly if the voltage is out of this range.

5-1-2 Check the parts that be weak or fragile

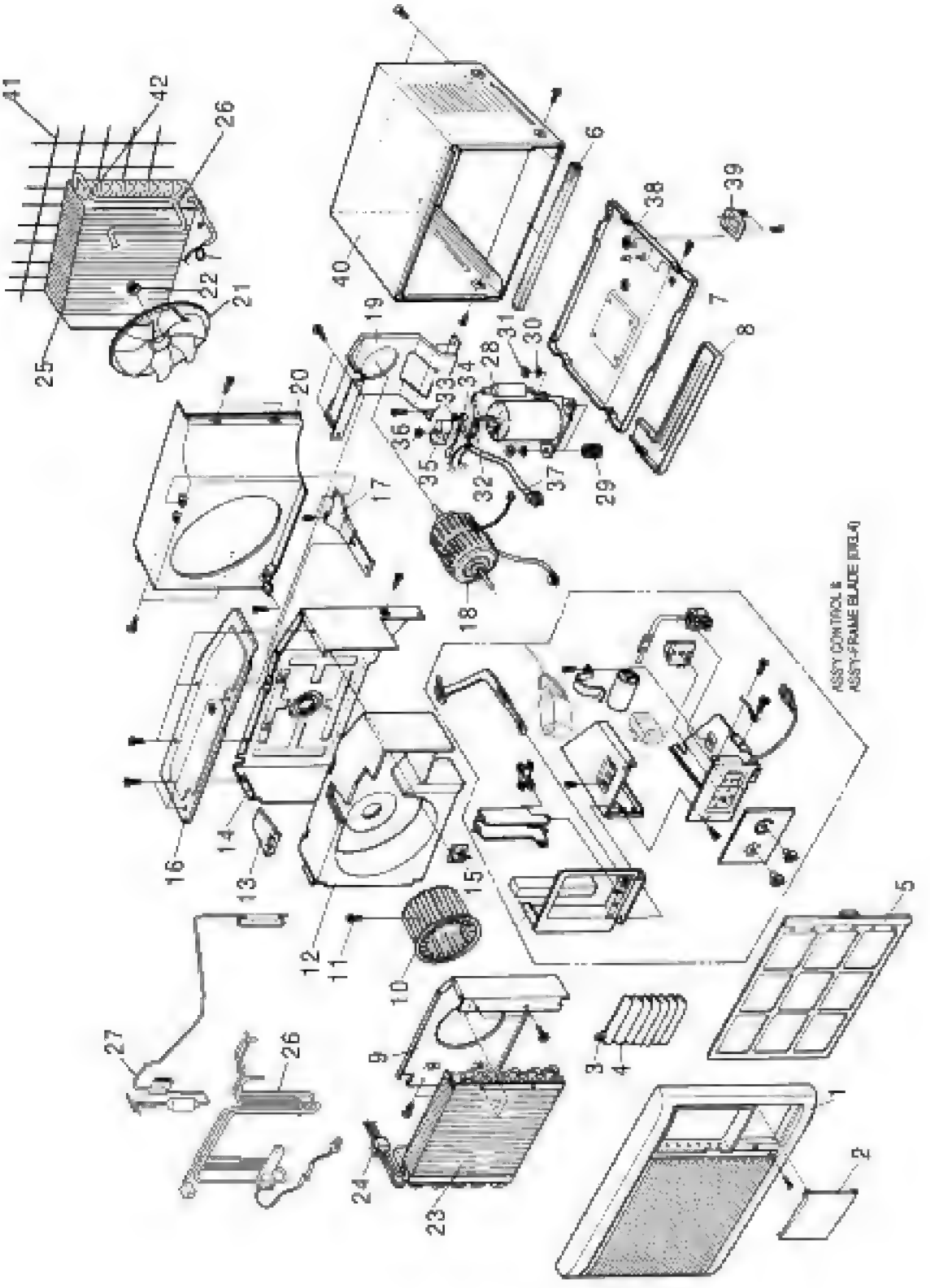
5-1-3 Check the terminals for proper connection

5-1-4 Refer to the table below when there is any malfunction;

No	Trouble	Checkpoints	Possible cause
①	The compressor does not operate.	1. Check the position of the thermostat. 2. Check the position of the select switch. 3. Check the connection of the lead wire. 4. Check the overload protector. 5. Check the compressor.	1. The setting temperature is higher than the room temperature in cool mode. 2. The setting temperature is lower than the room temperature in heat mode. 3. Lead wire disconnected. 4. O.L.P. damaged. 5. Compressor damaged.
②	The motor does not operate.	1. Check the connection of the lead wire and switch. 2. Check the motor. 3. Check whether the unit is deicing.	1. Lead wire disconnected. 2. Switch damaged. 3. Motor damaged. 4. The unit is operating on the deice mode.
③	The cooling capacity is low.	1. Check the refrigerant for leak. 2. Check the evaporator condition. (freezing, clogging with dust, etc.) ※ The temperature difference between the air inlet side and air outlet side should be 12℃ at the minimum. ※ Standard state Indoor : 27℃, Outdoor : 35℃	1. The leak is caused by a pipe crack. 2. Shortage of the refrigerant. 3. Clean the evaporator, and air filter.
④	The heating capacity is low	1. Check the refrigerant for leak. 2. Check the evaporator condition. (freezing, clogging with dust, etc.) 3. Check whether the drain equipment (DRAIN PAN, DRAIN TUBE) is installed. ※ The temperature difference between the air inlet side and outlet side should be 12℃ at the minimum. ※ Standard state Indoor : 20℃, Outdoor : 7℃ ※ Adequate operating temperature • Heating : Indoor : 0℃~21℃ approx. Outdoor : 28℃ or less.	1. The leak is caused by a pipe crack. 2. Shortage of the refrigerant. 3. Clean the evaporator, and air filter. 4. Install the drain pan and drain plug.
⑤	Noise	1. Check the vibration of the pipe. 2. Check the propeller fan and blower for looseness and weakness. 3. Check the motor bearing for noise. 4. Compare the compressor noise with other compressors.	1. The pipe is in contact with other parts. 2. The tightening of the hexagon nut is faulty. 3. Damage of the motor. 4. Damage of the compressor.

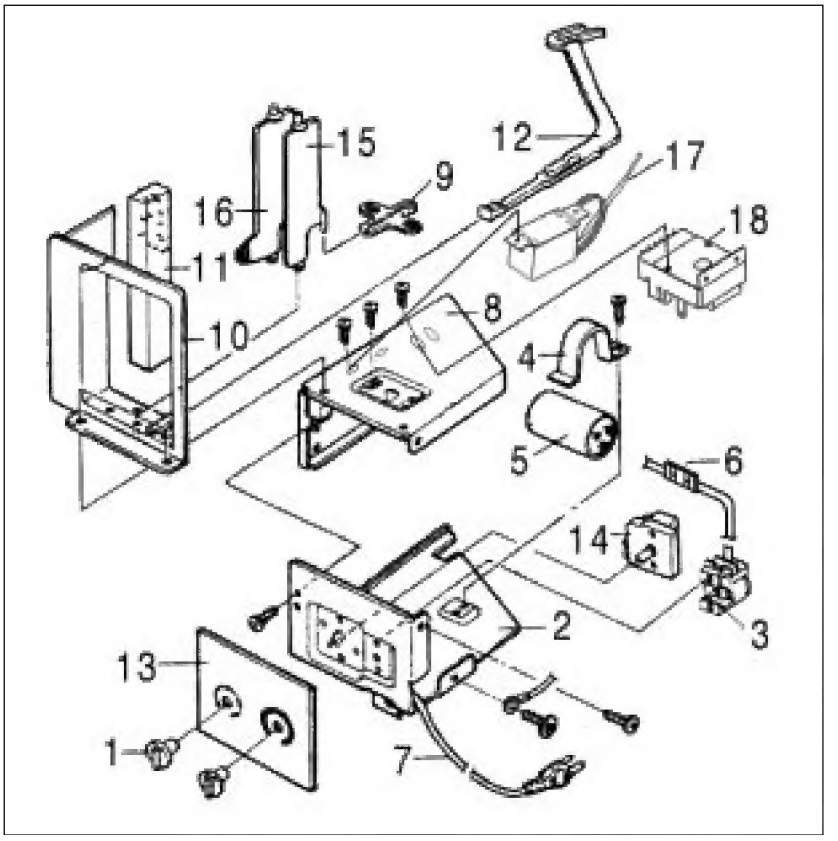
6. Exploded View and Parts List

6-1 Main unit



No.	Code No.	Description	Specification	Q'TY	Remarks
				AWH090ZE	
1	DB92-10006N	ASSY-GRILLE	HIPS, SC-94445R	1	
2	DB64-20036C	DOOR-CONTROL	ABS, SC-94445R	1	
3	DB66-60010B	LINK-BLADE, H	ABS, SC-94445R	1	
4	DB66-30037B	BLADE-H	ABS, SC-94445R	7	
5	DB63-30021B	GUARD-AIR FILTER	ABS, SC-94445R	1	
6	DB72-10102G	SEAL CABI FRONT	PO-PU	1	
7	DB90-20193A	ASSY-BASE PAN	SECC-P	1	
8	DB63-40009A	TRAY-DRAIN	31-FO PS, WHT	1	
9	DB67-30012A	PARTITION-E/CASING	SGCC-M, T0.8	1	
10	DB67-50051A	BLOWER	ABS	1	
11	DB60-20019A	BOLT-SPECIAL	M6,L11,ZPC3,S45C	1	
12	DB61-10012A	CASE-EVAP	FOAM-PS	1	
13	DB63-10121A	COVER-EVAP	FOAM-PS	1	
14	DB67-30013B	PARTITION	SGCC-M(G90-U), T1.0	1	
15	DB75-10001A	COVER DAMPER	PP	1	
16	DB63-10082A	COVER-EVAP	SGCC-M, T22	1	
17	DB67-90003A	REINF-PARTITION	SGCC-M, T1.0	1	
18	DB95-20134C	ASSY-MOTOR	AMAFS-040AXEA	1	⚠
19	DB61-30484A	SUPPORT-MOTOR	SGCC-M,T1.2	1	
20	DB61-10029A	CASE-COND	PP, BLK	1	
21	DB67-50031B	FAN-PROPELLER	AS+G/F(20%)	1	
22	DB60-30004A	NUT-FLANGE	M6,–,SM20C,NTR	1	
23	DB96-40172A	ASSY-EVAPORATOR	2x12 SLIT 1.4	1	
24	DB73-20047C	RUBBER-TUBE	EPDM, –, –, –	1	
25	DB96-30270A	ASSY-CONDENSER	2x13 WAVE 1.5	1	
26	DB62-31715A	TUBE-4WAY ASSY	AWH090ZE	1	
27	DB62-40034A	VALVE-CHECK ASS'Y	1/2inch, 30KG/CM2G	1	
28	DB95-10065M	ASSY-COMP	44H092J W1E4	1	⚠
29	DB73-10004A	GROMMET-ISOLATOR	EPDM	3	
30	6021-000124	NUT-HEXAGON	1C,M8,ZPC(YEL),SM10C	3	
31	DB60-50008A	WASHER-COMP	ID8.5,OD24,T1.6,ZPC	3	
32	DB63-20002A	GASKET	EPDM,T0.8	1	
33	DB67-60020A	SPRING-OLP	STS304-WPA	1	
34	DB47-20008B	OLP	MRA12037-12007	1	⚠
35	DB63-10165A	COVER-TERMINAL	NORYL	1	
36	DB60-30018A	NUT-FLANGE	PI0.8,M5,SM20C	1	
37	DB93-50012E	ASSY-LEAD WIRE COMP	AWM1015 AWG16	1	⚠
38	DB63-10355A	CAP-DRAIN	CR,T2,BLK	1	
39	DB67-20019A	DRAIN PAN OUT	PP	1	
40	DB90-10150C	ASSY-CABI	AWH090ZE	1	
41	DB71-40001B	BAR STEEL	HSWR,D2.5	1	
42	DB65-10010A	CLIP PIPE	SECC-P	1	

6-2 Ass'y Control

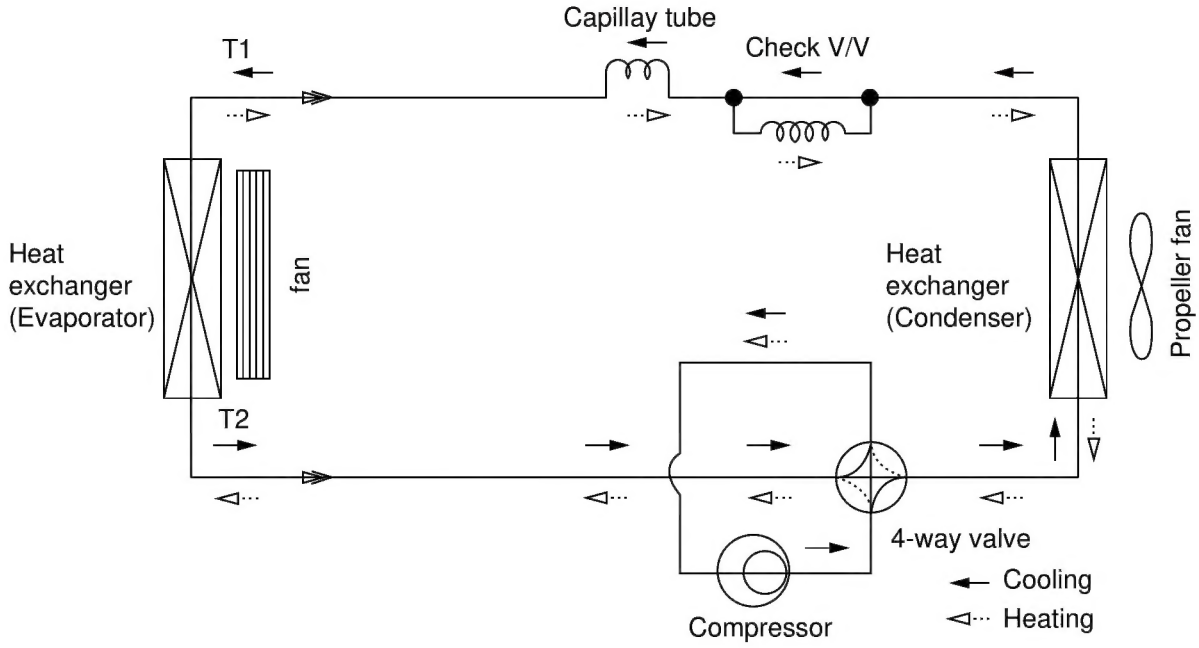


■ Part List

No.	Code No.	Description	Specification	Q'TY	Remarks
				AWH090ZE	
1	DB64-50131A	KNOB-ASSY	ABS, SC-94445R	2	
2	DB61-10030A	CASE-CONTROL LOW	SGCC-M,T0.8	1	
3	DB47-20067A	THERMOSTAT	13.8,3P	1	
4	DB65-10008A	CLIP-CAPACITOR	SGCC-M,T0.8	1	
5	2501-000353	C-OIL	30/3uF, 370V	1	
6	DB61-40192A	HOLDER SENSOR	PP BLK	1	
7	DB39-10062U	POWER CORD	250V, 10/16A	1	
8	DB61-10031A	CASE-CONTROL UP	SGCC-M,T0.8	1	
9	DB66-60009B	LINK-BLADE V	SC-94445R	1	
10	DB61-60022B	FRAME-BLADE	ABS, SC-94445R	1	
11	DB72-10018C	SEAL FRAME	FOPE+FOPU	1	
12	DB66-70011B	LEVER-DAMPER	ABS, SC-94445R	1	
13	DB64-40042J	INLAY-SWITCH	A1070S, T0.4,NO SWIN	1	
14	DB34-90085A	SWITCH-SELECTOR	ASSY, 5P	1	
15	DB66-30038B	BLADE-V	ABS, SC-94445R	1	
16	DB66-30040B	BLADE-VH	SC-94445R	1	
17	DB47-20068A	THERMOSTAT-DEICE	3P	1	
18	DB45-10009A	TIMER-DEFROST	D2506, 50/60Hz	1	

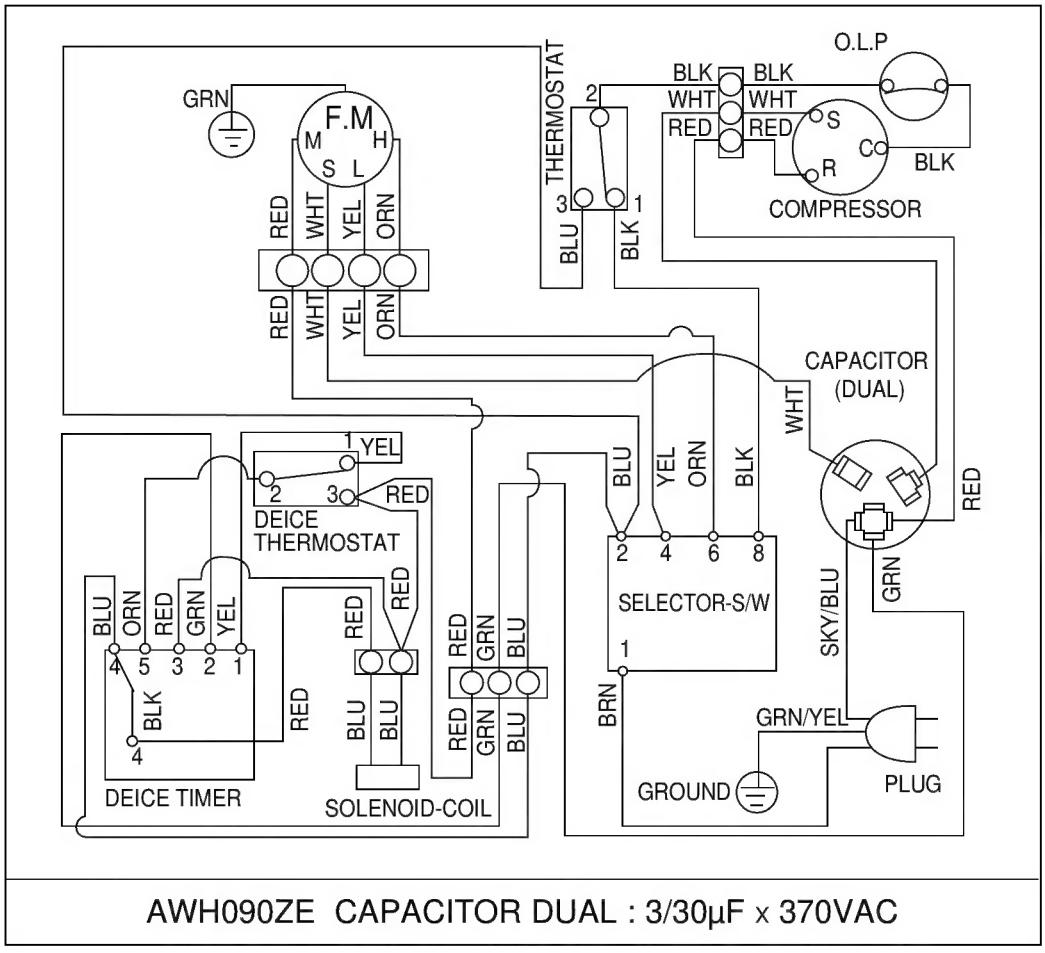
7. Block Diagram

7-1 Refrigerating Cycle Block Diagram



8. Wiring Diagram

8-1 AWH090ZE



AWH090ZE CAPACITOR DUAL : 3/30μF x 370VAC